

Applicant : Sandeep Gulati
Serial No. : 10/677,403
Filed : October 1, 2003
Page : 2 of 12

Attorney's Docket No.: 18329-004004

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A system for determining the level of a biological indicator within a patient sample applied to an array, where material associated with the array includes emitters emitting data indicative of the biological indicator, based on digitized output patterns from the array, comprising:

a preconditioning unit that modifies pre-conditions the digitized output pattern so that a scale of the digitized output pattern is compatible with a scale of a reference wave adapted for the array to facilitate an interferometric interaction;

an interferometric unit configured to generate a plurality of resonances an interference between the pre-conditioned digitized output pattern and the a reference wave to enhance the digitized output pattern, the resonances identifying data indicative of the biological indicator within the patient sample; and

an analysis unit for analyzing the interferometrically enhanced digitized output pattern to determine the level of the biological indicator.

2. (Currently Amended) A system for determining the level of specific constituents within an output pattern generated from a detected image of a biological sample applied to an array

Applicant : Sandeep Gulati
Serial No. : 10/677,403
Filed : October 1, 2003
Page : 3 of 12

Attorney's Docket No.: 18329-004004

wherein the output pattern comprises signals associated with noise, and signals associated with the biological sample which have intensities both greater and less than intensities of signals associated with noise, comprising:

a processor to tessellate ~~tessellation means for tessellating~~ the output pattern to facilitate signal processing;

interferometric signal processing means for amplifying signals associated with the biological sample within the tessellated output pattern, having an intensity lower than the intensity of signals associated with noise, to an intensity greater than the intensity of the signals associated with noise to generate a modified output pattern;

first determination means for determining which signals within the modified output pattern correlate with specific constituents within the biological sample;

second determination means for determining specific constituents within the biological sample based on the signals within the modified output pattern correlating to specific constituents within the biological sample; and

third determination means for associating the signals correlating to specific constituents with levels of such specific constituents within the sample.

3. (Currently Amended) A system for quantitating specific constituents within an output pattern generated from a detected image of a biological sample applied to an array wherein the output pattern comprises signals associated with noise, and signals associated with the biological

Applicant : Sandeep Gulati
Serial No. : 10/677,403
Filed : October 1, 2003
Page : 4 of 12

Attorney's Docket No.: 18329-004004

sample which have intensities both greater and less than intensities of signals associated with noise, comprising:

a tessellation unit for segmenting the output pattern;

an interferometric signal processing unit to amplify signals associated with the biological sample within the segmented output pattern, having an intensity lower than the intensity of signals associated with noise, to an intensity greater than the intensity of the signals associated with noise to generate a modified output pattern;

a first determination unit to determine which signals within the modified output pattern correlate with specific constituents within the biological sample;

a second determination unit to determine specific constituents within the biological sample based on the signals within the modified output pattern correlating to specific constituents within the biological sample; and

a mapping unit to map the signals correlating to specific constituents on a reference scale diffusion curve to determine the level of such specific constituents within the biological sample.

4. (Currently Amended) A technique for analyzing an output pattern of a biological sample applied to an array to determine the presence and quantity of specific constituents within a biological sample applied to the array, wherein the output pattern comprises signals associated with noise, and signals correlating to the biological sample with the signals correlating to the biological sample having intensities both greater and less than the signals associated with noise, the method comprising the steps of:

Applicant : Sandeep Gulati
Serial No. : 10/677,403
Filed : October 1, 2003
Page : 5 of 12

Attorney's Docket No.: 18329-004004

segmenting the output pattern of the array using tessellation;

interferometrically enhancing the segmented output pattern to amplify signals associated with the biological sample, having an intensity lower than the intensity of signals associated with noise, to an intensity greater than the intensity of the signals associated with noise to generate a modified output pattern;

associating signals within the interferometrically enhanced segmented output pattern with specific constituents within the biological sample; ~~and~~

determining specific constituents within the biological sample based on the signals within the interferometrically enhanced segmented output pattern associated with specific constituents within the biological sample; and

mapping the signals associated with specific constituents to a reference scale diffusion curve.

5. (Currently Amended) A computer code product, embodied on computer readable media, that determines the presence of specific constituents within an output pattern of a biological sample applied to an array of detectors, wherein the output pattern comprises signals associated with noise, and signals associated with the biological sample which have intensities both greater and less than intensities of signals associated with noise, the computer code product comprising:
- computer code that segments the output pattern using tessellation;
 - computer code that utilizes interferometric signal processing to amplify signals within the segmented output pattern associated with the biological sample having an intensity lower than

Applicant : Sandeep Gulati
Serial No. : 10/677,403
Filed : October 1, 2003
Page : 6 of 12

Attorney's Docket No.: 18329-004004

the intensity of the signals associated with noise, to an intensity greater than the intensity of the signals associated with noise to generate a modified output pattern;

computer code that determines which signals within the modified output pattern correlate with specific constituents within the biological sample; ~~and~~

computer code that determines specific constituents within the biological sample based on the signals within the modified output pattern correlating to specific constituents within the biological sample; and

computer code that maps signals correlating to specific constituents to a reference scale ~~diffusion curve~~.

6 – 12. (Canceled)

13. (Currently Amended) A method for determining the level of a biological indicator within a patient sample applied to an arrayed information structure, where material associated with the arrayed information structure emits data indicative of the biological indicator, based on digitized output patterns from the arrayed information structure, comprising ~~the steps of:~~

pre-conditioning the digitized output pattern so that it has a scale compatible with a scale of a reference wave ~~to facilitate an interferometric interaction;~~

generating an interference by inducing resonances between the pre-conditioned digitized output pattern and ~~the~~ a reference wave adapted for the arrayed information structure to enhance

Applicant : Sandeep Gulati
Serial No. : 10/677,403
Filed : October 1, 2003
Page : 7 of 12

Attorney's Docket No.: 18329-004004

the digitized output pattern, the resonances identifying data indicative of the biological indicator within the patient sample; and

analyzing the interferometrically enhanced digitized output pattern to determine the level of the biological indicator.

14. (Currently Amended) The method of claim 13, wherein the analyzing step comprises:
generating a viral diffusion curve with a biological indicator of interest;
mapping the output patterns to the viral diffusion curve; and
determining the degree of convergence between the mapped coordinates of the respective output patterns mapped on the viral diffusion curve.
15. (Canceled).
16. (Currently Amended) The method of claim 13~~5~~ wherein the generating an interference interferometric enhancement step utilizes at least one of the group comprising: resonance interferometry, quantum resonance interferometry, and stochastic resonance interferometry.
17. (Currently Amended) The method of claim 15 further comprising ~~the step of tessellating the output pattern prior to the interferometric enhancement step.~~

Applicant : Sandeep Gulati
Serial No. : 10/677,403
Filed : October 1, 2003
Page : 8 of 12

Attorney's Docket No.: 18329-004004

18. (Currently Amended) The method of claim 14 further comprising ~~the step of~~ performing nucleic acid amplification to enhance the output patterns prior to the mapping ~~step~~.

19. (Previously Presented) The method of claim 14 wherein the sample is selected from a group consisting of DNA, RNA, protein, peptide-nucleic acid (PNA) and targeted nucleic acid (TNA) samples.

20. (Currently Amended) The method of claim 13 wherein the pre-conditioning comprises tessellating the enhanced output pattern.

21. (Currently Amended) The system of claim 1, further comprising means for mapping the data indicative of the biological indicator to a viral diffusion curve.

22. (Previously Presented) The system of claim 1, further comprising means for determining viral load.

23. (Currently Amended) The system of claim 2, wherein the third determination means comprises means for mapping the signals correlating to specific constituents to a reference scale ~~diffusion curve~~.

Applicant : Sandeep Gulati
Serial No. : 10/677,403
Filed : October 1, 2003
Page : 9 of 12

Attorney's Docket No.: 18329-004004

24. (Currently Amended) The system of claim 23, wherein the specific constituents are associated with viral load and the reference scale ~~diffusion curve~~ is a viral diffusion curve.

25. (Previously Presented) The system of claim 2, wherein the signal processing means comprises resonance interferometry.

26. (Previously Presented) The system of claim 25, wherein the resonance interferometry comprises quantum resonance interferometry or stochastic resonance interferometry.

27. (New) A system as in claim 1, wherein the reference wave is based on a quantum expressor function.